

**Patent claims**

1. A tool for closing and separating pluggable quick acting closure couplings for hydraulic lines (12), in particular of construction machines, with two engagement elements (18) which can be brought into engagement with in each case one coupling half (14, 16) of the quick acting closure coupling (10), and with an actuating mechanism (20), which can preferably be handled manually, for the plugging-in movement of the coupling halves (14, 16) via a mutual relative movement of the engagement elements (18), characterized in that the actuating mechanism (20) has a linear guide (28) which comprises two guide parts (32, 34) which are displaceable linearly in relation to each other, and in that the engagement elements (18) protrude transversely to the guide track (30) on one guide part in each case to form extension arms.

2. The tool as claimed in claim 1, characterized in that the coupling halves (14, 16) are movable linearly along a plug-in axis (64) running parallel to the guide track (30) at a lateral distance between the engagement elements (18).

3. The tool as claimed in claim 1 or 2, characterized in that the linear guide (28) has a tube (32) and a rod (34), which is longitudinally displaceable therein, as guide parts (32, 34).

4. A tool for closing and separating pluggable quick acting closure couplings for hydraulic lines (12), in particular of construction machines, with two engagement elements (18) which can be brought into engagement with in each case one coupling half (14, 16) of the quick acting closure coupling (10), and with an actuating mechanism (20), which can preferably be

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handled manually, for the plugging-in movement of the coupling halves (14, 16) via a mutual relative movement of the engagement elements (18), characterized in that the actuating mechanism (20) has a handle tube (32) and  
5 a rod (34), which is displaceable longitudinally therein, as a linear guide for the engagement elements (18), and in that the handle tube (32) at the same time forms a hand lever for the manual actuation.

10 5. The tool as claimed in claim 3 or 4, characterized in that the handle tube (32) runs parallel to a plug-in axis and has a handle piece on a free end section.

15 6. The tool as claimed in one of claims 1 to 5, characterized in that the linear guide (28) is secured against rotation by a sliding block (36) guided in a groove (38) or by a polygonal cross section.

20 7. The tool as claimed in one of claims 1 to 6, characterized in that the engagement elements (18) can be fixed on the guide parts (32, 34) via releasable connecting means (54, 56).

25 8. The tool as claimed in claim 7, characterized in that the connecting means (54, 56) have an adjustment region running in the direction of the guide track (30), in particular a screw thread for setting the position of the engagement elements (18).

30 9. The tool as claimed in one of claims 1 to 8, characterized in that the engagement elements (18) can be brought into form-fitting connection with the coupling halves (14, 16).

35 10. The tool as claimed in one of claims 1 to 9, characterized in that the engagement elements (18) each

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have a fork-shaped piece (58) for engaging laterally around a coupling half (14, 16).

11. The tool as claimed in one of claims 1 to 10,  
5 characterized in that the engagement elements are formed by ring segment bodies (58) which can be placed onto the coupling halves (14, 16) via an edge aperture (60) and are connected to the guide parts (32, 34) at a ring portion lying opposite the edge aperture (60).

10 12. The tool as claimed in claim 11, characterized in that the central opening (62) of the ring segment bodies (58) is displaced eccentrically with respect to the ring axis toward the edge aperture (60).

15 13. The tool as claimed in one of claims 1 to 12, characterized in that the engagement elements (18) can be closed in each case in the manner of pliers for adaptation to different diameters of the coupling  
20 halves (14, 16).

14. The tool as claimed in one of claims 1 to 13, characterized in that the engagement elements (18) can be coupled to adaptor pieces, in particular adaptor  
25 disks, for adaptation to different diameters of the coupling halves (14, 16).

15. The tool as claimed in claim 14, characterized in that the adaptor pieces can be inserted into a  
30 receptacle of the engagement elements (18) or can be fitted on the coupling halves.

16. The tool as claimed in one of claims 1 to 15, characterized in that the engagement elements (18) each  
35 have a conically widening opening (62) for receiving a coupling half (14, 16), the central axes of the openings (62) being aligned with each other.

17. The tool as claimed in one of claims 1 to 16, characterized in that at least one engagement element is designed as a hook (68) and can be fitted on a coupling half (14, 16) or on a mount (70) supporting the coupling halves (14, 16).

18. The tool as claimed in one of claims 1 to 17, characterized in that the actuating mechanism (20) has at least one pivot lever (40) and a deflecting mechanism (20) for transferring the movement of the pivot lever into the linear movement of the guide parts (32, 34).

19. A tool for closing and separating pluggable quick acting closure couplings for hydraulic lines (12), in particular of construction machines, with two engagement elements (18) which can be brought into engagement with in each case one coupling half (14, 16) of the quick acting closure coupling (10), and with an actuating mechanism (20), which can preferably be handled manually, for the plugging-in movement of the coupling halves (14, 16) via a mutual relative movement of the engagement elements (18), the actuating mechanism (20) having a handle tube (32) and a rod (34), which can be displaced longitudinally therein, as a linear guide for the engagement elements (18), and a manually actuated pivot lever (40), which is connected to the handle tube in an articulated manner via a deflecting mechanism (20), for transferring the movement of the pivot lever into a linear movement in a manner free from jamming.

20. The tool as claimed in claim 18 or 19, characterized in that the pivot lever (40) is bent at its end (46) coupled to the linear guide (28), so that, during a pivoting actuation, the free lever end of the

pivot lever (40) comes into a small angular position with a guide part (32) which can be handled as the counter lever.

5 21. The tool as claimed in one of claims 18 to 20, characterized in that the deflecting mechanism (20) comprises a double-jointed tension lever (44) which is coupled to the pivot lever (40) and to a guide part (32), in particular a handle tube.

10 22. The tool as claimed in one of claims 18 to 21, characterized in that the pivot lever (40) is supported pivotably on a guide part (34) via a coupling element (50), and in that the coupling element (50) can be  
15 adjusted longitudinally on the guide part (34) in the guide direction and can be fixed in a desired adjustment position, preferably in a self-holding manner.

20 23. The tool as claimed in claim 21 or 22, characterized in that the deflecting mechanism (20) comprises a drag lever (50) coupled to the pivot lever (40) at a distance from the tension lever (44).

25 24. The tool as claimed in claim 23, characterized in that the drag lever (50) is mounted with play on the guide part (34), which is free from the tension lever (44), via a clamping aperture (52), so that, if the drag lever (50) tilts, the guide part (34) comes into  
30 clamping connection in the clamping aperture (52).

25. The tool as claimed in claim 23 or 24, characterized in that the drag lever (50) is held via a supporting spring at a distance from the guide part  
35 (32) to be drawn up.

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26. The tool as claimed in one of claims 18 to 25, characterized in that the deflecting mechanism (20) has a rack (74), which is connected fixedly to one of the guide parts (32, 34), for fitting a fulcrum pin (66) of  
5 the pivot lever (40) into.